June 26, 1934. A. FRENCH ET AL 1,964,200

DECORATIVE CANDLE

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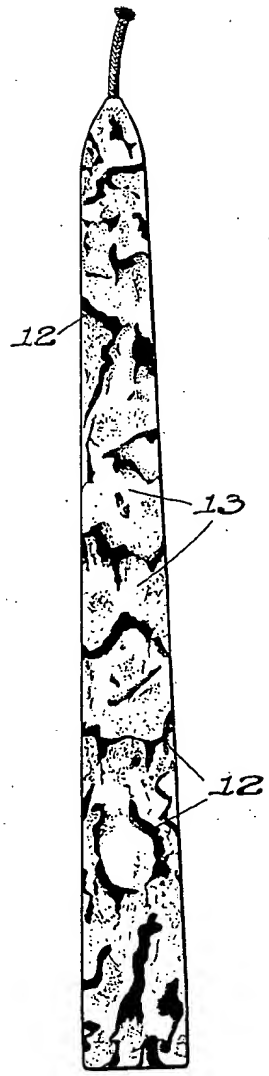

Fig.1

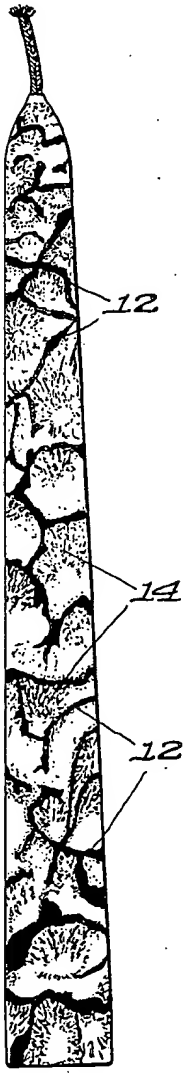

Fig.2

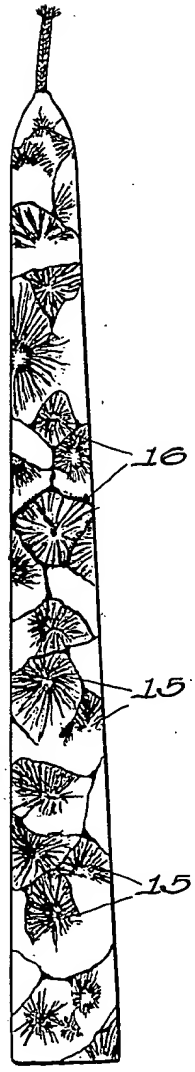

Fig.3

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Fig. 4

Fig. 5

Fig. 6

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DECORATIVE CANDLE

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18 Claims. (Cl. 87—21)

This invention relates to a process for decorating articles such as candles and molded wax products and the like.

The object of this invention is to provide a novel coating material and novel process for using the same whereby candles and like materials can be decorated to give a cloisonné appearance. Also our new coating materials and process provide a way for decorating candles with superficial coatings that have the appearance of radial foliae or fibers of crystalline metals. These crystal-like coatings vary from fan-shaped clusters or metallic-like needles, or a galvanized metal appearance, to a hammered soft metal appearance.

Another object of our invention is to provide a method whereby the above effects can be produced by dipping, thereby avoiding the expense of hand decorating each candle. The method for embellishing candles and the like to give the above appearances will be understood from the following description when read in connection with the following drawings in which:

Figures 1 and 2 show the cloisonné type of superficial coatings.

Figure 3 shows the radial foliae of metallic-like crystals or clusters of fan-like crystalline metal. Also this type resembles a galvanized metal coating.

Figure 4 shows a hammered soft metal-like type of superficial coating.

Figure 5 shows an isometric view of the candle after partly burned.

Figure 6 shows a vertical cross section through part of a burned candle, showing the crater in detail.

We have found that the above types of embellishments can be imparted to candles prepared from any type of paraffin used for molding or dipping candles. The first step in the process of preparing these decorated candles comprises applying a transparent pre-coat to the candle, preferably a dyed candle. The transparent pre-coat is applied by dipping the candle therein and then permitting it to dry. The dry candle has the same color as it did before dipping and, if desired, dyes or metallic powders may be put in the pre-coat instead of using a dyed candle.

The pre-coat is composed of any suitable material or materials that do not dissolve the paraffin wax and which do not flux or dissolve in the crystal-forming coating that is to be placed over said pre-coat. Also the pre-coat should not interfere with the burning of the candle; in fact, it is very desirable that the pre-coat aid in forming a crater or cup around the wick as the candle burns, as shown at 10 of Figs. 5 and 6. As a suitable example of this pre-coat, we have found the following composition to be very satisfactory:

Table I

Materials	Preferred amounts
White shellac (about 4.5 lbs. per gal. of alcohol)	125 c.c.
Sandarac	30 gr.
Alcohol	100 c.c.

A precoat of the above composition dries quickly and does not dissolve the candle. The pre-coat is transparent and does not interfere with the original color of the candle. However, dyes, or finely divided pigments may be added to the pre-coat if desired. The above pre-coat is particularly desirable because it melts or softens uniformly as the candle burns and will maintain a well-defined ridge around the wick, as shown at 11 of Figs. 5 and 6. The molten pre-coat will remain on the rim that surrounds the crater of molten wax and will not pass into the crater and smother the flame.

It should be understood that the proportions of materials used in the pre-coat may be varied without departing from the scope of our invention. For example, the amount of sandarac may be varied from 20 to 45 grams, and various concentrations of shellac may be used. Instead of using alcohol as the solvent, other alcohols such as cellosolve and similar organic solvents may be used as a vehicle for the shellac and sandarac provided the solvent does not dissolve the paraffin wax.

The second coating, or crystal growing coating, which is put on over the pre-coat comprises a suitable vehicle that will not dissolve the pre-coat, such as benzol, toluene, xylene or mixtures of these; a crystallizable organic material such as naphthalene and its equivalent homologues; a finely divided metallic powder such as finely powdered aluminum or bronze, also iridescent materials and the like may be used in the place of the metallic powders; a carrier for the finely divided metals such as ester gums, particularly those ester gums which appear on the market under the name of Lewisol; and a plasticizing material such as boiled linseed oil to prevent the metallic powder from being rubbed off the candle when dry. In order to have a satisfactory crystal growing solution, the solvents and other materials used therein should not have a solvent action upon the pre-coat. Also the crystal grow-

ing coating should not interfere with the burning of the candle and the substances that make up the crystal growing coating should be compatible with each other. A satisfactory example of a crystal growing solution or suspension is as follows:

Table II

Materials	Preferred amounts
Xylene	70-80 cc.
Benzol	20-30 cc.
Ester gum (Lewisol)	10-12 grams.
Naphthalene	About 40 grm.
Boiled linseed oil	3-5 cc.
Gold bronze or aluminum powder	30-45 gm.

It should be understood that the proportions of materials used in the crystal growing solution may be varied without departing from the scope of our invention. Also instead of using the materials set forth for the crystal growing solution, other materials with equivalent properties may be used. Instead of using xylene and benzol, we may use benzol and nitrobenzene, or benzol and dichlordiethyl ether.

From the foregoing it is apparent that the crystal growing solution should comprise an essentially saturated solution of a crystal-forming compound (about 30-40% solution) in a varnish consisting of a gum which is compatible with the crystal-forming compound, a mixture of a solvent and a light solvent which are also compatible with the gum and the crystal-forming substance and a plasticizer such as linseed oil which also is compatible with the rest of the ingredients. The above must not dissolve or soften the pre-coat (Table I). We believe that the light solvent evaporates and in addition to concentrating the solution of crystal-forming compound it also cools the liquid and lowers the solubility of the crystalline material.

Example 1

The following example gives a process for preparing the cloisonné type of candles as shown in Figs. 1 and 2. A candle of any size, which may be dyed any suitable color, such as blue, black, green, red, pink or lavender is dipped into the pre-coat and then withdrawn and permitted to dry. The pre-coat used is set forth in Table I. The dried candle has a glossy, transparent coating and the original color of the candle is not changed. However, the pre-coat does lend brilliance to the original color of the candle. The pre-coated candle is now dipped into the crystal growing solution and then withdrawn and permitted to dry. As the solution begins to dry, the metallic particles come together in small veins, as shown at 12 of Figs. 1 and 2. By the time the candle has dried, the metallic particles have concentrated in irregular veins and there are substantially no particles of metallic powder in the spaces 13 between the veins, thereby permitting the original color of the candles to appear between these irregular veins of metallic powder. However, on some of the candles a feather-like dispersion of metal-like fibers or network of small veins of metallic powder will appear between the larger veins of metallic particles as shown at 14 of Fig. 2, and the original color of the dyed candle can be seen between the interstices of the feather-like dispersion of metallic particles. The formation of these feather-like dispersions can be increased by increasing the amount of gum in the crystal growing solution. When the amount of gum used is greater than the amount set forth in Table II, the feather-like dispersion of metallic powder will increase. Generally, the amount of gum needed is from 15 to 20 grams. The finished candle is smooth and glossy and contains the irregular veins of metallic powder, for example, gold or silver in appearance, as shown at 12 of Figures 1 and 2, and the color in the spaces 13 between the veins is the same as that of the dyed candle. The combination of this colored base and network of metallic powder veins gives an appearance resembling cloisonné. If desired, the metallic powder may be omitted from the crystal growing solution and candles dipped in this solution will dry with clusters of the crystallizable substances scattered over the surface.

Th explanation for the formation of these irregular veins is thought to result from the tendency of the growing crystals of the crystallizable substances such as naphthalene to push the metlallic particles ahead of the growing crystal.

Example 2

The following example gives a process for embellishing candles to give a radial foliae of fibers or crystalline metal effect, or a galvanized metal appearance. A candle of any suitable size or color is dipped into a solution of the pre-coat as given in Table I and then permitted to dry. The candle is now ready to be dipped into the crystal growing solution, but in order to accentuate the crystalline effect of the crystallizable substances in the crystal growing solution, the amount of ester gum should be greater than that shown in Table II. A suitable crystal growing solution for giving the galvanized metal appearance is as follows:

Table III

Materials	Preferred amounts
Benzol	20-30 cc.
Xylene	70-80 cc.
Ester gum (Lewisol)	30-35 grms.
Naphthalene	About 40 grm
Boiled linseed oil	About 4 c.c.
Powdered aluminum	30-45 gm.

The above proportions of materials may be varied somewhat without materially affecting the galvanized metal appearance desired. The pre-coated candle is now dipped into the above crystal growing solution and permitted to dry. As the crystals grow the metallic particles remain for the most part with the crystallizable material instead of being pushed ahead of the growing crystals. The crystalline fibers or radial foliae are shown at 15 in Fig. 3. However, when two clusters of crystals collide a well-defined mark results, as shown at 16 in Fig. 3. The increase in the amount of ester gum used in the crystal growing solution apparently accounts for the tendency of the metallic particles to remain associated with the crystallizable substances.

Example 3

The following example gives the process for decorating candles to give a hammered soft

metal appearance. A candle of any suitable size is dipped into a solution of pre-coat as set forth in Table I and then permitted to dry. The candle is then dipped into a suitable crystal growing solution. However, instead of using the aromatic solvents employed in Tables II and III we have found that carbon tetrachloride combined with the high boiling dichlordiethyl ether are desirable in order to produce the hammered soft metal effect. A suitable example of a crystal growing solution which will produce superficial coatings resembling hammered soft metal is as follows:

Table IV

Materials	Preferred amounts
Carbon tetrachloride	About 100 cc.
Beta, beta', dichlorethyl ether	About 20 cc.
Ester gum (Lewisol #2)	18-25 grams.
Naphthalene	About 40 gm.
Boiled linseed oil	About 4 cc.
Gold bronze powder	About 30-45 gm.

It should be understood that the above proportions may be varied somewhat and equivalent materials may be used in place of those disclosed without departing from the scope of our invention. The pre-coated candle is now dipped into the above crystal growing solution, withdrawn and dried. As the candles dry, crystalline metal-like flakes form over the entire surface of the candle and give the appearance of hammered soft metal. These metal-like flakes do not project from the surface of the candle. They are integral with the superficial coating and the surface of the candle is very smooth. The candles to be decorated with a hammered metal effect may also be colored candles. The crystalline metal-like flakes subdue the color and give delicate pastel effects.

From the foregoing disclosures it is apparent that in order to produce the desired crystalline effect a pre-coat or undercoat must be provided. The requirements for the pre-coat are that it should not dissolve the candle, should not interfere with the burning of the candle and should preferably aid in the formation of a cup as the candle burns and should not be dissolved by the solvents and other materials in the crystal growing solution. We have found that when a pre-coat is composed of shellac and sandarac the aromatic solvents or halogenated organic solvents should be used in the crystal growing solution because they do not dissolve the pre-coat. If alcohol were used in the crystal growing solution it would dissolve the pre-coat and seriously impair if not totally prevent crystal growth.

Crystal growing solutions other than those disclosed herein may be used, and in preparing a crystal growing solution care must be taken to use solvents such as benzene, toluene, xylene, halogenated aliphatic hydrocarbons and halogenated aliphatic compounds such as ethers, in other words, solvents that do not dissolve the substances in the pre-coat.

As other examples of pre-coats, which can be used with some degree of success, we may use a coating of shellac; a pre-coat of sandarac; nitrocellulose; cellulose acetate; or a mixture of nitrocellulose with shellac and/or sandarac. However, when the above compositions are used as pre-coats, organic solvents such as benzol, xylol, and like homologues should be used in the crystal growing composition.

As other examples of the crystal growing composition, we may use the following:

Benzol	90–100 cc.
Di(2-chlorethyl) ether or nitrobenzene	10–20 cc.
Ester gum	10–12 gm.
Naphthalene	About 40 gm.
Boiled linseed oil	3–5 cc.
Gold or aluminum bronze	30–45 gm.

Instead of using naphthalene as the crystallizable organic compound, we may use organic compounds with similar properties, such as anthracene, alkyl derivatives of anthracene, benzoic acid, and similar crystallizable organic compounds.

It is apparent that many beautiful crystal effects can be prepared by our process by using various combinations of colored candles and metallic powders or iridescent materials.

We claim:

1. The process for decorating colored candles which comprises applying thereto a superficial transparent pre-coat comprising shellac and sandarac, then applying over said pre-coat a crystal growing solution comprising an ester gum, naphthalene and a plasticizing agent and permitting said solution to dry.

2. The process for decorating candles which comprises applying thereto a pre-coat comprising an admixture of shellac and sandarac, then applying a crystal growing solution over said pre-coat, said crystal growing liquid containing a crystallizable organic compound selected from the group consisting of naphthalene, anthracene and benzoic acid.

3. The process for decorating candles which comprises applying thereto a pre-coat comprising an admixture of shellac and sandarac, then applying a crystal growing solution over said pre-coat, said crystal growing liquid containing naphthalene.

4. A candle having a superficial coating comprising an admixture of shellac and sandarac and a second coating superimposed thereon comprising ester gum, naphthalene and a finely divided metallic powder.

5. A process for decorating candles which comprises applying thereto a pre-coat solution comprising an alcoholic solution of shellac and sandarac, permitting said pre-coat to dry and then applying a crystal growing liquid over said pre-coat, said crystal growing liquid containing a crystallize combustible organic compound selected from the group consisting of naphthalene, anthracene and similar crystallizable homologues.

6. The process for decorating candles which comprises applying thereto a pre-coat comprising an alcoholic solution of shellac and sandarac, and then applying a crystal growing liquid over said pre-coat, said crystal growing liquid comprising a benzol-xylol solution of an ester gum and a crystallizable organic compound selected from the group consisting of naphthalene, anthracene, alkyl derivatives of anthracene, and similar crystallizable homologues.

7. The process for decorating candles which comprises applying thereto a pre-coat comprising an alcoholic solution of shellac and sandarac, and then applying a crystal growing solution over said pre-coat, said crystal growing solution comprsing a benzol xylol solution of naphthalene and ester gum.

8. The process for decorating candles which comprises applying thereto a pre-coat solution

comprising an alcoholic solution of shellac and sandarac, then permitting said pre-coat to dry, and then applying a liquid comprising benzol, naphthalene and a small amount of a plasticising agent.

9. The process for decorating candles which comprises applying thereto a pre-coat by dipping the candle into an alcoholic solution of shellac and sandarac, then permitting the pre-coat to dry, then dipping the candle into a liquid comprising benzol and xylol, ester gum, naphthalene, linseed oil and a finely divided metallic powder.

10. A candle having a superficial coating comprising an admixture of shellac and sandarac and a second coating superimposed thereon comprising an ester gum, naphthalene, linseed oil and finely divided aluminum powder.

11. A candle having a superficial coating comprising an admixture of shellac and sandarac and a second coating superimposed thereon comprising an ester gum, naphthalene and finely divided bronze powder.

12. The process for decorating candles which comprises applying a pre-coat to a colored paraffin candle, said pre-coat having no solvent action upon the paraffin, permitting said pre-coat to dry, then applying to said candle a liquid comprising naphthalene, ester gum, linseed oil and a finely divided metallic powder, said solution having no selvent action upon the pre-coat.

13. The process of decorating colored candles which comprises applying thereto a pre-coat comprising an alcoholic solution of shellac, and then applying over said pre-coat a liquid comprising an ester gum, a plasticizing agent, finely divided metallic powder, xylene, and a crystallizable organic material selected from the group consisting of naphthalene and anthracene.

14. The process for decorating candles which comprises adding thereto a pre-coat solution comprising an alcoholic solution of shellac and sandarac, then permitting said pre-coat to dry, and then applying a liquid coating comprising xylene, naphthalene, and a small amount of plasticizing agent.

15. A candle having a superficial coating comprising shellac and a second coating superimposed thereon comprising an ester gum, naphthalene, a plasticizing agent, and finely divided metallic powder.

16. The process for decorating candles which comprises applying a transparent pre-coat to a candle, said pre-coat having no solvent action upon said candle, permitting said pre-coat to dry, and then applying to said candle a liquid comprising the following ingredients:

Xylene	70–80 cc.
Benzol	20–30 cc.
An ester gum	10–35 cc.
Naphthalene	About 40 gm.
Linseed oil	3–5 cc.
Finely divided metallic powder	30–45 gm.

17. The process of decorating candles which comprises applying thereto a pre-coat comprising an alcoholic solution of transparent shellac, permitting said pre-coat to dry, and then applying to said candle a liquid comprising the following ingredients in about the following proportions:

Xylene	70–80 cc.
Benzol	20–30 cc.
An ester gum	10–35 cc.
Naphthalene	About 40 gm.
Linseed oil	3–5 cc.
Finely divided metallic powder	30–45 gm.

18. The process of decorating candles which comprises applying thereto a pre-coat comprising an alcoholic solution of shellac and sandarac, then permitting said pre-coat to dry, and then dipping the candle into a liquid comprising carbon tetrachloride, dichlorethyl ether, an ester gum, naphthalene, linseed oil, and a finely divided metallic powder.

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